

Business Unit	Document Ref No.:	Rev. No.	Effective Date	Page No.
Industrial Services	FM-DIV02-EP-0002	00	01 st August 2016	1 of 1
TECHNICAL PROPOSAL				

Project Title	Inspection and Overhaul on Extruder Machines at Unit 42,43 & 44	Client	S-CHEM
Proposal No.	ECC-RSD-QUO-2111-0071	RFQ/PR#	25000942
Date	02-November-2021	Rev.	00
Attention to:	Mr. Mustafa Syed		
Subject:	Site Execution Service, Inspection and Overhaul on Extruder Machines at Unit 42,43 & 44		

Date : **02-November-2021**

Attn. : **Mr. Mustafa Syed**
 Saudi Chevron Phillips Co. (S-Chem)
 Al-Fanateer Square, Chamber of Commerce Building, 5th Floor- 512
 Jubail, Kingdom of Saudi Arabia
 T: +966 13 359 6567
 E: syedm@saudichevron.com

Subject: Proposal for Site Execution Service, Inspection and Overhaul on Extruder Machines at Unit 42,43 & 44

Dear Sir,

This has reference to your RFQ#25000942 on 19-October-2021, we are pleased to submit our Technical Proposal # ECC-RSD-QUO-2111-0071 which shall remain valid for Three (03) Months from the proposal date and later to our confirmation.

Further, we certify that our proposal is prepared as per the scope of work provided to us by client and any exclusions are specifically pointed out by us. Further, we hope that you will find this proposal competitive, concurrent to the actual requirement and to your full satisfaction. Should you require any further technical assistance / clarification, please feel free to contact our undersigned officials.

Assuring you of our best services always.

MAHAMMAD ASHPAK
 Vice President – Industrial Services



Zachariah M. Thomas

ZACHARIAH M. THOMAS
 Department Manager
 Rotary Services Department
 Tel: +966 13 3408324 Ext: 922
 Mobile: +966 53 762 4554
 Email: zachariah.t@expertindus.com

INDEX

1.0	INTRODUCTION	3
2.0	BASIS OF QUOTATION	3
3.0	EXPERTISE SCOPE OF WORK AND SERVICES	3
4.0	S-CHEM SCOPE OF WORKS	22
5.0	EXCLUSIONS	22
6.0	DURATION	23
7.0	NOTES	23
8.0	ENVIRONMENT, HEALTH, SAFETY & SECURITY:.....	23
9.0	SUBMITTALS	25
10.0	BID VALIDITY	25
11.0	REFERENCES	25
12.0	PAYMENT TERMS	26

1.0 INTRODUCTION

Technical Proposal for Site Execution Service, Inspection and Overhaul on Extruder Machines at Unit 42,43 & 44.

2.0 BASIS OF QUOTATION

2.1 Our offer is based on the following

- RFQ & SOW
- Site Visit

3.0 EXPERTISE SCOPE OF WORK AND SERVICES

3.1 General

- 3.1.1 EXPERTISE shall provide competent manpower, tools and equipment required for the satisfactory performance of the Services. All manpower, including Expertise management personnel, shall have the requisite academic as well as technical qualifications and the requisite expertise & competence for the works involved.
- 3.1.2 Furnish transportation from S-CHEM (SPCO SOUTH) to Expertise and Vice-versa of equipment and tools required by this statement of work.
- 3.1.3 Food, accommodation, and transportation for the crew shall be arranged by Expertise.
- 3.1.4 Expertise's site supervisor shall issue a daily technical report to S-CHEM (SPCO SOUTH) execution supervisor, which shall include all findings & abnormalities that require suitable rectifications / corrections.
- 3.1.5 Expertise's site supervisor shall issue a daily progress report to S-CHEM (SPCO SOUTH) Planning on actual progress, at the end of each working shift.
- 3.1.6 Final report shall be submitted to S-CHEM (SPCO SOUTH) after the job completion. The report shall cover (but not limited to) details of activities, records, findings, corrective actions, future recommendations etc.
- 3.1.7 Expertise shall provide detailed QA Plan & Work procedure for approval by S-CHEM (SPCO SOUTH) after award of PO.
- 3.1.8 Qualified supervisors and crew shall be assigned by contractor during execution. They shall be accountable for ensuring safe execution of job according to procedure, job quality, and progress and schedule compliance. They shall report abnormalities to S-CHEM (SPCO SOUTH) maintenance Supervisor for immediate action.
- 3.1.9 The contractor personnel shall adhere strictly to S-CHEM (SPCO SOUTH) Safety Rules and Regulations.
- 3.1.10 After award of PO, contractor shall submit a detailed Mobilization/ Demobilization schedule, within 30 days from PO issuance.

- 3.1.11 After award of PO, contractor shall conduct Kick-off Meeting with S-CHEM (SPCO SOUTH) Team within 2 weeks from PO issuance.
- 3.1.12 Only Forklift as required for the scope is considered in this proposal.
- 3.1.13 Crew, Tools and Equipment for the Bolt Torquing, Skidding and Hydro jetting required as per the scope of work is considered in this proposal.

3.2 Expertise Detailed Scope of Work

Detailed Maintenance Scope of Work for Extruder's Overhaul Unit 42,43 & 44 Unit 42, HDPE Scope

3.2.1 Unit 42/ZSK380 /HDPE

- Overhaul Screws, Barrels & Process Section assemblies; Overhauling of Screw & Barrels that includes all dismantling & Re-assembling of process parts, existing barrels & screws, screen changer, Die Head housing, pelletizer system (assembly & Gear Box), DAV valves, Hydraulic system & other accessories. Replacement of the damaged parts.
- Overhaul Suprex gearbox: Replacement of wearable parts at a minimum; Replace Oil. Change all bearings and sealing, check all installed parts as gears and shaft. This job also involves Uncoupling & Recoupling of Motor with Gear Box, solo run testing & alignment of Main Drive Motor. (Motor Dismantling, Overhauling, Installation, Rigging or electrical testing is not part of this scope).
- Overhaul Pellet Dewatering Dryers 42X84/85; Replacement of Bearings, sprockets & Dry Screens

3.2.2 Unit 43/ZSK380 /LDPE

- Overhaul Screws, Barrels & Process Section assemblies; Overhauling of Screw & Barrels that includes all dismantling & Re-assembling of process parts, existing barrels & screws, screen
- changer, Repair of Any Polymer leaks, Die Head housing, pelletizer system (assembly & Gear Box), DAV valves, Hydraulic system & other accessories. Replacement of the damaged parts.
- Overhaul Suprex gearbox: Replacement of wearable parts at a minimum; Replace Oil. Change all bearings and sealing, check all installed parts as gears and shaft, Repair of Gear Box Bolts. This job also involves Uncoupling & Recoupling of Motor with Gear Box, solo run testing & alignment of Main Drive Motor. (Motor Dismantling, Overhauling, Installation, Rigging, or electrical testing is not part of this scope).
- Overhaul Pellet Dewatering Dryers 43X84/85; Replacement of Bearings, sprockets & Dry Screens

3.2.3 Unit 44 / ZSK350 / PP

- Overhaul Screws, Barrels & Process Section assemblies; Overhauling of Screw & Barrels that includes all dismantling & Re-assembling of process parts, existing barrels & screws, screen changer, Die Head housing, pelletizer system (assembly & Gear Box), DAV valves, Hydraulic system & other accessories. Replacement of the damaged parts.
- Overhaul Flender gearbox; Replacement of wearable parts at a minimum; Replace Oil. Change all bearings and sealing, check all installed parts as gears and shaft. This job also involves Uncoupling & Recoupling of Motor with Gear Box, solo run testing & alignment of Main Drive Motor. (Motor Dismantling, Overhauling, Installation, Rigging or electrical testing is not part of this scope).
- Overhaul Pellet Dewatering Dryer 44X84; Replacement of Bearings, sprockets & Dry Screens.

Unit 42, HDPE Scope

Line:	Unit 42
Machine:	ZSK 380
Machine no.:	20507503
Project no.:	64020862
SWZ:	21000
MP:	NA
UG:	1000
Polymer	HDPE
Manufactured9	2009

Extruder's System Related- Rotating Scope - Unit 42

SOW Doc Ref#	JOB ID	Unit	Tag No	Equipment Name	Scope of Work
1.1	SPCo - SP-0726	42	42V80	Extruder	1. Remove screw shafts for wear measurement. 2. Hydro blast polymer from screw shafts. 3. Unstack screw shaft elements for inspection for wear & Replacement (AWR) as recommended. 4. Verify spare screw timing using roll test before installing in barrels. 5. Clean elements and NDT splines for cracks. 6. Clean and NDT screw shaft for cracks. 7. Hydro blast barrels for inspection. 8. Measure barrel wear using COBRA instrumentation. 9. Remove barrels to replace gaskets if required due to polymer leaks. 9a; If Barrel replacement is decided after inspections , these would be replaced(AWR) 10. Overhaul the screw shaft seal if worn, replace the sealing set. 11. Check all heating and cooling connection piping and valves. 12. Check the instruments, N2 control unit of Mecos seals. 13. Chemical cleaning by Acid flushing all barrel sections. 14. Perform leak test for cooling and heating circuits. 15. Replace Mecos seals. 16. Grease the screw shaft couplings. Note ; Spare Barrel & Elements would be available If barrels would be replaced, then chemical cleaning would be not required on old barrel (By other contractor)
1.1	SPCo- SP-0728	42	42DAV	Extruder Startup valve DAV - 42A404	1. Remove DAV plug and clean excessive polymer leak. 2. Remove DAV/SUV housing for screw removal. 3. Replace hydraulic cylinder. 4. Hydro blast DAV to remove degraded polymer. Check Notification # 11861430 and confirm with Shafi. 15.JUN.2020. BA
1.1	SPCo - SP-0729	42	42A40 5	Screen - pack changers	1. Remove screen changer housing for screw removal. 2. Remove sliders to clean and lubricate. 3. Hydro blast S/C after removal to remove degraded polymer. 4. Replacement of screen elements (independent from shut-down activity). 5. Drain hydraulic fluid from cylinders. 6. Disconnect Hydraulic oil supply and return hoses. 7. Replace hydraulic oil hoses.
1.1	SPCo - SP-0730	42	42T90	SPC/DAV Hydraulic system	Change the Hydraulic oil.
1.1	SPCo - SP-	42	42A40 9	42A409 - Die-plate	To Replace on insulation ring bolts on die plate Replace die-

	0731				plate
1.1	SPCo - SP- 0732	42	42A41 0	Pelletizer	1. Replace O-Ring at pelletizer water box. 2. Check and repair sealing face of water box. 3. Replace all bearings, seals, and O-rings of the knife shaft bearing assembly. 4. Replace the distance bushing for angular contact bearings on shaft. 5. Knife adjustment: Check hydraulic cylinders for leakage. 6. Replace springs and O-Rings of docking pins. 7. Replace docking pin and docking cylinders on the pelletizer. 8. Check of cardan-shaft for backlash and re-lubrication. If required replace. 9. Replace coupling insert between motor and gearbox. 10. Replace of hydraulic oil filter. 11. Change hydraulic oil. 12. Replace pumps. (Refer to SPCo-SP-2507 and 2508)-to be done by Schem Team 13. Pelletizer movement: Check hydraulic cylinder for leakage: 14. Replace the gearbox bearings and inspect the gears and shafts and replace the seal. 15. Replace the Motor Bearings.
1.1	SPCo - SP- 0733	42	42T85	Pelletizer hydraulic oil system	Change the Hydraulic oil.
1.1	SPCo - SP- 2657	42	42A40 8	Die Head Housing	1. Remove Die Head Housing 2. Clean (Hydro jetting) and Inspect
1.2	SPCo- SP- 072 7	42	42A203	Extruder gearbox	1. Remove all gears shafts for bearing replacement and inspection of gears. 2. Check function of lubrication system to bearings and gear. 3. Change oil and filters. 4. Replace superposition drive backstop. 5. Replace all bearings, seals, and rotary union. 6. Verify timing of shafts. 7. Inspect lube oil piping for cracks. 8. NDT shaft and gears. 9. Inspect the Desch coupling 10. Replace Desch coupling bolts 11. Replace Desch coupling flexible elements (buffer) 12. Inspect / replace Friction unit

1.2	SPCo- SP- 2882	42	42XM8 0	Extruder Motor	<u>Solo run the motor and verify magnetic running center of the shaft so placement of the shaft position can be done when coupling to the gear box. Electrical Testing will be carried out by Siemens representative.</u> (This job related to: Rotating) Notification # 11836378
1.3	SPCo- SP- 0739	42	42X84	Pellet Dewatering Dryer	Replace the Dryer screens. Replace the Top & bottom Bearings & seals, Replace inlet filter. Inspect sprocket and replace belt.
1.3	SPCo- SP- 0740	42	42X85	Pellet Dewatering Dryer	Replace the Dryer screens. Replace the Top & bottom Bearings & seals, Replace inlet filter. Inspect sprocket and replace belt.

3.3 Unit 43, LDPE Scope

Line:	Unit 43
Machine:	ZSK 380
Machine no.:	20507540
Project no.:	64020863
SWZ:	21000
MP:	NA
UG:	1000
Polymer	LLDPE
manufactured	2009

Extruder's System Related- Rotating Scope- Unit 43

SOW Doc Ref#	JOB ID	Unit	Tag No	Equipment Name	Scope of Work
2.1	SPCo-SP-0743	43	43V80	Extruder	1. Remove screw shafts for wear measurement. 2. Hydro blast polymer from screw shafts. 3. Unstack screw shaft elements for inspection for wear & Replacement (AWR) as recommended. 4. Verify spare screw timing using roll test before installing in barrels. 5. Clean elements and NDT splines for cracks. 6. Clean and NDT screw shaft for cracks. 7. Hydro blast barrels for inspection. 8. Measure barrel wear using COBRA instrumentation. 9. Replace 7 Barrels barrels & gaskets if required due to polymer leaks. (AWR) 10. Overhaul the screw shaft seal if worn, replace the sealing set. 11. Check all heating and cooling connection piping and valves. 12. Check the instruments, N2 control unit of Mecos seals. 13. Chemical cleaning by Acid flushing all barrel sections. 14. Perform leak test for cooling and heating circuits. 15. Replace Mecos seals. 16. Grease the screw shaft couplings. Note ; Spare Barrel & Elements would be available If barrels would be replaced, then chemical cleaning would be not required on old barrel (By other contractor)



2.1	SPCo- SP- 0745	43	43DAV	Extruder Startup valve DAV 43A404	1. Remove DAV plug and clean excessive polymer leak. 2. Remove DAV/SUV housing for screw removal. 3. Replace hydraulic cylinder. 4. Hydro blast DAV to remove degraded polymer. ----- Check Notification # 11861431 and confirm with Shafi. 15.JUN.2020. BA
2.1	SPCo- SP- 0746	43	43A405	Screen changers	1. Remove screen changer housing for screw removal. 2. Remove sliders to clean and lubricate. 3. Hydro blast S/C after removal to remove degraded polymer. 4. Replacement of screen elements (independent from shut-down activity). 5. Drain hydraulic fluid from cylinders. 6. Disconnect Hydraulic oil supply and return hoses. 7. Replace hydraulic oil hoses.
2.1	SPCo- SP- 0747	43	43T90	SPC/DAV Hydraulic system	Change the Hydraulic oil
2.1	SPCo- SP- 0748	43	43A409	43A409 - Die- plate	To Replace on insulation ring bolts on die plate Replace die-plate

2.1	SPCo-SP-0749	43	43A410	Pelletizer	1. Replace O-Ring at pelletizer water box. 2. Check and repair sealing face of water box. 3. Replace all bearings, seals, and O-rings of the knife shaft bearing assembly. 4. Replace the distance bushing for angular contact bearings on shaft. 5. Knife adjustment: Check hydraulic cylinders for leakage. 6. Replace springs and O-Rings of docking pins. 7. Replace docking pin and docking cylinders on the pelletizer. 8. Check of cardan-shaft for backlash and re-lubrication. If required replace. 9. Replace coupling insert between motor and gearbox. 10. Replace of hydraulic oil filter. 11. Change hydraulic oil. 12. Replace pumps. (Refer to SPCo-SP-2511 and 2512)- to be done by Schem Team 13. Pelletizer movement: Check hydraulic cylinder for leakage: 14. Replace the gearbox bearings and inspect the gears and shafts and replace the seal. 15. Replace the Motor Bearings.
2.1	SPCo-SP-0750	43	43T85	Pelletizer hydraulic oil system	Change the Hydraulic oil.
2.1	SPCo-SP-2484	43	43X80	SPC (Screen Pack Changer)	Need to Fix Polymer Leak from Screen Pack Changer Side. Notification # 11819169
2.1	SPCo-SP-2658	43	43A408	Die Head Housin g	1. Remove Die Head Housing 2. Clean (Hydro jetting) and Inspect

2.2	SPCo- SP- 07 44	43	43A203	Extruder gearbox	1. Remove all gears shafts for bearing replacement and inspection of gears. 2. Check function of lubrication system to bearings and gear. 3. Change oil and filters. 4. Replace superposition drive backstop. 5. Replace all bearings, seals, and rotary union. 6. Verify timing of shafts. 7. Inspect lube oil piping for cracks. 8. NDT shaft and gears. 9. inspect the Desch coupling 10. Replace Desch coupling bolts 11. Replace Desch coupling flexible elements (buffer) 12. Inspect / replace Friction unit
2.2	SPCo- SP- 24 83	43	43X80 - V80	Gearbox	Three bolts on the gearbox need to be repaired. Rotating Reliability engineer and Coperion vendor will have to determine the type of repair necessary. Notification # 11818912
2.2	SPCo- SP- 28 83	43	43XM80	Extruder Motor	<u>solo run the motor and</u> verify magnetic running center of the shaft so placement of the shaft position can be done when coupling to the gear box. <u>Electrical Testing will be carried out by Siemens representative.</u> (This job related to: Rotating) Notification # 11836379
2.3	SPCo- SP- 07 56	43	43X84	Pellet Dewatering Dryer	Replace the Dryer screens. Replace the Top & bottom Bearings & seals, Replace inlet filter. Inspect sprocket and replace belt.
2.3	SPCo- SP- 07 57	43	43X85	Pellet Dewatering Dryer	Replace the Dryer screens. Replace the Top & bottom Bearings & seals, Replace inlet filter. Inspect sprocket and replace belt.

Unit 44, PP Scope

Line:	Unit 44
Machine:	ZSK 350
Machine no.:	20507466
Project no.:	64020861
SWZ:	14000
MP:	NA
UG:	725
Polymer	PP
manufactured	2009

Extruder's System Related- Rotating Scope-

Unit 44

SOW Doc Ref#	JOB ID	Unit	Tag No	Equipment Name	Scope of Work
3.1	SPCo-SP-1806	44	44X80	44V80- Extruder Die Plate (A409)	1. Replace Die Plate 2. Removed die need to send to Coperion WS for overhauling.
3.1	SPCo-SP-1858	44	44A410	44V80- Pelletizer	1. Replace O-Ring at pelletizer water box. 2. Check and repair sealing face of water box. 3. Replace Pelletizer Knife Shaft Assembly with Warehouse stock. 4. Removed Pelletizer Knife Shaft Assembly Need to Be Overhauled (Replace all bearings, seals, and O-rings of the knife shaft bearing assembly, Replace the distance bushing for angular contact bearings on shaft) 5. Knife adjustment: Check hydraulic cylinders for leakage. 6. Replace springs and O-Rings of docking pins. 7. Replace docking pin and docking cylinders on the pelletizer. 8. Check of cardan-shaft for backlash and re-lubrication. If required replace. 9. Replace of hydraulic oil filter. 10. Change hydraulic oil. 11. Pelletizer movement: Check hydraulic cylinder for leakage:
3.1	SPCo-SP-1859	44	44X92	44V80- Throttle Valve	1. Remove DAV plug and clean the excessive polymer leak. 2. Remove DAV/SUV housing for screw removal. 3. Replace hydraulic cylinder. 4. Hydro blast DAV to remove degraded polymer.
3.1	SPCo-SP-1860	44	44X93	44V80- Start Up Valve (DAV)	1. Remove DAV plug to clean the excessive polymer and inspection. 2. Remove DAV/SUV housing for screw removal. 3. Replace hydraulic cylinder soft kits. 4. Hydro blast DAV to remove degraded polymer.
3.1	SPCo-SP-1861	44	44X94A	44V80- Screen Pack Changer A	1. Drain hydraulic fluid from cylinders. 2. Disconnect Hydraulic oil supply and return hoses. 3. Remove screen changer housing for screw removal. 4. Hydro blast S/C after removal to remove degraded polymer.

					5. Remove sliders to clean and lubricate 6. Replacement of screen elements 7. Replace hydraulic oil hoses
3.1	SPCo- SP-1862	44	44X94B	44V80- Screen Pack Changer B	1. Drain hydraulic fluid from cylinders. 2. Disconnect Hydraulic oil supply and return hoses. 3. Remove screen changer housing for screw removal. 4. Hydro blast S/C after removal to remove degraded polymer. 5. Remove sliders to clean and lubricate 6. Replacement of screen elements (independent from shut- down activity). 7. Replace hydraulic oil hoses
3.1	SPCo- SP-1864	44	44X80	44V80- Extruder (Zone/Barrels)	1. Disconnect/Connect Barrel Cooling Water (BCW) supply and return connections from/to the barrels. 2. Disconnect/Connect HP steam supply and condensate return connections from/to the barrels. 3. Remove screw shafts for wear measurement. 4. Hydro blast polymer from screw shafts. 5. Unstack screw shaft elements for replacement due to wear. 6. Verify spare screw timing using roll test before installing in barrels. 6a; Screw & Elements would be available for replacement and if required, these would be replaced. (AWR) 7. Clean elements and NDT splines for cracks. 8. Clean and NDT screw shaft for cracks. 9. Remove barrels and Hydro blast for inspection. Kindly confirm whether required leak test for barrel. (It will be evaluated after the barrels inspection as per rotation equipment department comment) 9a. Barrels 2 to 9 is recommended for Replacement. (AWR) 10. Measure barrel wear using COBRA instrumentation. 12. Overhaul the screw shaft seal if worn, replace the sealing set. 13. Replace barrels gaskets. 14. Check all heating and cooling connection piping and valves. 15. Check the instruments, N2 control unit of Meco seals. 16. Acid (Chemical Cleaning) flush all barrel sections by third party support. (Please refer the line item # SPCo-SP-2651) 17. Replace Meco seals. 18. Grease the screw shaft couplings.



3.1	SPCo-SP-1865	44	44A408	44V80- Die Head Housing Zone	1. Remove Die Head Housing 2. Inspect and Clean (Hydro jetting)
3.1	SPCo-SP-2618	44	44T85	44V80- Pelletizer Hydraulic Oil Tank	1. Change the Hydraulic oil. 2. Tank Cleaning. 3. Suction screen/ strainer cleaning.
3.1	SPCo-SP-2651	44	44X80	BCW	1. Acid (Chemical Cleaning) flush all barrel sections by third party support. (This line item associated with # SPCo-SP-1864)
3.2	SPCo-SP-1863	44	44A203	44V80- Extruder Gear Box	1. Remove all gears shafts for bearing replacement and inspection of gears. 2. Check function of lubrication system to bearings and gear. 3. Change oil 4. Replace Auxiliary drive backstop. 5. Replace all bearings, seals, and rotary union. 6. Verify timing of shafts. 7. Inspect lube oil piping for cracks. 8. NDT shaft and gears. 9. Inspect the Desch coupling 10. Replace Desch coupling bolts 11. Replace Desch coupling flexible elements (buffer) 12. Inspect / replace Friction unit
3.2	New Job	44	44XM80	Extruder Motor	solo run the motor and verify magnetic running center of the shaft so placement of the shaft position can be done when coupling to the gear box. Electrical Testing will be carried out by Siemens representative. (This job related to: Rotating)
3.3	SPCo-SP-1852	44	44X84	44V84- Pellet Dewatering Dryer	1. Replace the Top & bottom Bearings. 2. Replace the seals, inlet filter 3. Inspect the rotor assembly 4. Replace Belt. 5. Inspect the Sprocket 6. Inspect the screen and replaced if required. (with warehouse stock)

Task Lists of Various Sub-Assemblies involved in Complete Overhaul of Extruder Machines

- As a representative, Activities against Equipments of Unit 42 units are given below. Being the identical machines & scope similarity, U43 & U44 tasks can be understood accordingly.
- In Following section, anticipated maintenance Tasks/activities are listed for each sub-assembly involved in Overall Extruder Overhaul and scope of work

Equipment Number: 42V80 / EXTRUDER
Work Order Number: 4267614
Description of Work: Overhauling
WL SR. Number: SPCo-SP-0726
Area: 12
System: EXTRUDER

Sequence Number	Phase P/E/X	Task/Activity Description
1.	E	Arrange the material and the spares.
2.	E	LTT verification and permit approval.
3.	E	Breaks loose the screw tips.
4.	E	Pull out the screw shafts.
5.	E	Isolate steam completely.
6.	E	Disconnect all the cooling and steam lines.
7.	E	Remove the barrels
8.	E	Clean all the head surfaces, flanges & sealing surfaces.
9.	E	Hydro blast polymer from screw shafts.
10.	E	Unstack screw shaft elements for inspection for wear.
11.	E	Clean and NDT screw shaft for cracks.
12.	E	Hydro blast barrels for inspection.
13.	E	Measure barrel wear using COBRA instrumentation.
14.	E	Inspect and install the barrels
15.	E	install the new screw elements into the shaft
16.	E	Verify spare screw timing using roll test
17.	E	install the screw shaft into the barrels
18.	E	Replace the screw shaft sealing set (Meco seals).
19.	E	Check all heating and cooling connection piping and valves.
20.	E	Perform leak test for cooling and heating circuits.
21.	E	Check the instruments, N2 control unit of Meco seals.
22.	E	Grease the screw shaft couplings.
23.	E	Connect all the piping to the process section and hopper.
24.	E	clean all areas and close permit.

Equipment Number: 42DAV/ Extruder Startup valve DAV - 42A404
Work Order Number: 4267611
Description of Work: OVERHAULING
WL SR. Number: SPCo-SP-0728
Area: 12
System: EXTRUDER

Sequence Number	Phase P/E/X	Task/Activity Description
1.	E	Arrange the material and the spares.
2.	E	LTT verification and permit approval.
3.	E	loose the SPC/SUV flange connection.

4.	E	Remove all the hydraulic hoses, Rheometer.
5.	E	Rig up the SPC housing and transport to lay down area.
6.	E	Hydro jet and clean the SPC housing.
7.	E	Remove the safety guard.
8.	E	Dis assemble the rack and studs.
9.	E	Support the upper slider and pull it out.
10.	E	Support the lower slider and pull it out.
11.	E	Clean all the internals, dress up the sliders.
12.	E	Install the lower slider.
13.	E	Install the upper slider.
14.	E	Assemble the studs and rack.
15.	E	Connect the instruments
16.	E	Fix back all the hydraulic hoses, Rheometer.
17.	E	Clean all area and close permit

Equipment Number: 42A405/ Screen pack changers
Work Order Number: 4267608
Description of Work: Overhauling
WL SR. Number: SPCo-SP-0729
Area: 12
System: Extruder

Sequence Number	Phase P/E/X	Task/Activity Description
1.	E	Arrange the material and the spares.
2.	E	LTT verification and permit approval.
3.	E	Loose the SPC/SUV flange connection.
4.	E	Drain hydraulic fluid from cylinders.
5.	E	Remove all the hydraulic hoses, Rheometer.
6.	E	Rig up the SPC housing and transport to lay down area.
7.	E	Hydro jet and clean the SPC housing.
8.	E	Remove the safety guard.
9.	E	Dis assemble the rack and studs.
10.	E	Support the upper slider and pull it out.
11.	E	Support the lower slider and pull it out.
12.	E	Clean all the internals, dress up the sliders.
13.	E	Install the lower slider.
14.	E	Install the upper slider.
15.	E	Assemble the studs and rack.
16.	E	Tighten the piston bolts.
17.	E	Replace screen elements
18.	E	SPC housing transport to site
19.	E	install SPC housing at location
20.	E	Replace hydraulic oil hoses.
21.	E	Remove LTT
22.	E	clean all areas and close permit

9.	E	Clean all the parts.
10.	E	Replace the bearings and assemble.
11.	E	Pelletizer trolley transport to site
12.	E	Position and fix Pelletizer
13.	E	Fix back the flexi hose...
14.	E	install all the instruments.
15.	E	clean all area and close permit

Equipment Number: 42T85 / Pelletizer hydraulic oil system
Work Order Number: 4267612
Description of Work: Change the Hydraulic oil.
WL SR. Number: SPCo-SP-0733
42 Area:
System: EXTRUDER

Sequence Number	Phase P/E/X	Task/Activity Description
1.	P	Arrange the oil drums at location
2.	E	LTT verification and permit approval.
3.	E	Drain the Hydraulic oil.
4.	E	clean the Tank
5.	E	Replace the Hydraulic oil.
6.	E	clean all area and close permit

Equipment Number: 42A408 - DIE HEAD HOUSING
Work Order Number: 4267609
Description of Work: INSPECTION
WL SR. Number: SPCo-SP-2657
Area: 12
System: EXTRUDER

Sequence Number	Phase P/E/X	Task/Activity Description
1.	E	LTT verification and permit approval.
2.	E	remove all the piping on die plate.
3.	E	Break loose die head housing, measurement...
4.	E	Remove the die head housing.
5.	E	clean the die head housing.
6.	E	Install die head housing.
7.	E	clean all areas and close permit

Equipment Number: 42X84 / PELLET DEWATERING & DRYER
Work Order Number: 4267398
Description of Work: OVERHAULING
WL SR. Number: SPCo-SP-0739
Area: 12
System: EXTRUDER

Sequence Number	Phase P/E/X	Task/Activity Description
1.	E	Isolate the dryer.
2.	E	LTT verification and permit approval.
3.	E	Open the dryer access door & clean thoroughly.
4.	E	Remove the screens and clean thoroughly.
5.	E	Support the rotor.
6.	E	Remove the drive guard.
7.	E	Remove the rotor sheeve.
8.	E	Remove the upper bearing
9.	E	Install the new bearing.
10.	E	Sqare the bearing holding flange.
11.	E	Remove the bottom bearing and seal.
12.	E	Install the bottom bearing and seal.
13.	E	Install the screens.
14.	E	Secure the splash guard and the access door.
15.	E	Install the rotor sheeve.
16.	E	Install the new belts and tension the belts.
17.	E	Fix back the motor base and the guard.
18.	E	Replace the air filter.
19.	E	Clean the area and close the permit.

Equipment Number: 42X85 / PELLET DEWATERING & DRYER
Work Order Number: 4267599
Description of Work: OVERHAULING
WL SR. Number: SPCo-SP-0740
Area: 12
System: EXTRUDER

Sequence Number	Phase P/E/X	Task/Activity Description
1.	E	Isolate the dryer. LTT.
2.	E	LOTO verification and permit approval.
3.	E	Open the dryer access door & clean thoroughly.
4.	E	Remove the screens and clean thoroughly.
5.	E	Support the rotor.
6.	E	Remove the drive guard.
7.	E	Remove the rotor sheeve.
8.	E	Remove the upper bearing
9.	E	Install the new bearing.
10.	E	Align the bearing holding flange.
11.	E	Remove the bottom bearing and seal.
12.	E	Install the bottom bearing and seal.
13.	E	Install the screens.
14.	E	Secure the splash guard and the access door.
15.	E	Install the rotor sheeve.
16.	E	Install the new belts and tension the belts.
17.	E	Fix back the motor base and the guard.
18.	E	Replace the air filter.
19.	E	Clean the area and close the permit.



4.0 S-CHEM SCOPE OF WORKS

- 4.1 Electrical scope of work.
- 4.2 Mobile crane / Overhead crane, Rigging Plan, Riggers and EOT crane operator.
- 4.3 Removal of all instrument devices (Probes, Cables, transmitters, switches, etc.)
- 4.4 Issue of ID, Passes, and Permits for Expertise crew and vehicles.
- 4.5 Provide Electrical, Plant air and Water utilities.
- 4.6 All insulation and scaffolding work required or the job.
- 4.7 Inspection of expertise equipment tools and issuing stickers and gate passes.
- 4.8 Provide laydown area for Expertise offices.
- 4.9 Overhead crane inspection and certification in Extruder area
- 4.10 Provide all necessary technical documents/drawings.
- 4.11 All scope mentioned in the separate section-5 of Exhibit -1 of Parallel jobs.
- 4.12 All insulation and scaffolding work required or the job.
- 4.13 Provide laydown area for Expertise offices.
- 4.14 Overhead crane inspection and certification in Extruder area (If required)
- 4.15 Provide all necessary technical documents/drawings.
- 4.16 Motor Dismantling, Overhauling, Installation, Rigging or electrical testing.
- 4.17 Provide blinds, gaskets, and spare parts.
- 4.18 All scope mentioned in the separate section-6 of parallel jobs mentioned in the Exhibit-1.

5.0 EXCLUSIONS

- 5.1 Any kind of site or workshop activities other than those clearly mentioned in the scope are excluded from our offer.
- 5.2 Overhauling or rewinding of any motors connected or used in the equipment.
- 5.3 Supplying any spare parts or OEM resources.
- 5.4 Any activities such as Blasting and Painting, Scaffolding and any repair works for the equipment's.
- 5.5 Any type of third-party inspection works like NDT services or Calibration.

6.0 DURATION

6.1 Total project shall be completed within 31 days with two shifts per day (both day and night).

7.0 NOTES

- 7.1 Expertise shall carryout LASER alignment by the "PRÜFTECHNIK ROTALIGN Smart RS5 EX with RF Laser Alignment Kit (Intrinsically Safe model) or Easy Laser XT770", if required or else dial gauge alignment shall be carried out.
- 7.2 In case respective job is preponed or postponed we will have commercial impact & our resource availability to be confirmed.
- 7.3 Our offered prices are not valid for partial order. For any change in the Scope of Works, Supply or Services, the prices need re-adjustment & mutual agreement and acceptance.
- 7.4 Expertise is not responsible or liable for indirect or consequential damages of any kind, however arising during the commissioning, including but not limited to those of incidental or consequential damages with respect to S-CHEM personnel, business, or property. A separate quote shall be submitted to S-CHEM if the rectification to be done on site.
- 7.5 For any additional work, changes in specifications/commercial terms will be priced separately.
- 7.6 All equipment overhauling of (Unit# 42,43,44) work shall be carried out in parallel.
- 7.7 NDT preparation will be done by Expertise and the testing shall have to be carried out by S-CHEM.
- 7.8 Proposed Schedule is only for the activities to be done by Expertise, any other activity apart from Proposed SOW will be merged as per the scheduled date provided by S-CHEM.

8.0 ENVIRONMENT, HEALTH, SAFETY & SECURITY:

- 8.1 Expertise Safety, Health and Environment Program shall be in compliance with S-CHEM Safety, Health and Environment Management System (SHEMS) and Policies.
- 8.2 Expertise shall place the highest importance and priority on safety, health and the protection of the environment during performance of the Services.
- 8.3 Expertise shall be responsible for safety related to and during the performance of Services at Services site and shall take reasonable measures to ensure that our manpower maintain a safe working environment and properly protect (i) all persons in proximity of worksite, employed or otherwise, from risk of injury and danger to health and (ii) property from damage or loss.
- 8.4 Expertise shall inspect Services site and become familiar with the safety, health, and environmental conditions at the site(s) where the Services are to be performed. Before commencement of Services, Expertise shall inspect copies of S-CHEM Material Safety Data Sheets relating to toxic substances and hazardous materials which Expertise's employees may be potentially exposed to during the performance of Services.

Where Expertise employees are potentially exposed to toxic substances or hazardous materials, Expertise shall notify employees of such potential exposure, the hazards associated therewith, and shall furnish them with necessary protective clothing and equipment and enforce necessary operating practices to avoid any harmful exposure during the performance of Services hereunder.

- 8.5 Before starting the Services on Services site, Expertise shall effectively communicate to employees and publish on the premise safety, fire and other health regulations necessary to comply with applicable law. Expertise also shall establish and publish all appropriate health, sanitation, fire and other safety and health regulations, including methods and procedures, embodying its own requirements and those of S-CHEM. Expertise shall ensure that our employees and employees before they begin and throughout their employment at the Services site, are made aware of safety and health regulations and are notified that compliance therewith is a condition of their continued employment at the Services site. Expertise shall remove from the Services site any employees that refuse to abide by such safety, health, and environmental regulations, unless prohibited by applicable law.
- 8.6 The Safety Officer(s) designated shall be responsible for Expertise compliance with safety, health and environmental regulations imposed by applicable law and/or Expertise. Said Safety Officer(s) or an alternate shall be available at the Services site at all times during performance of the Services to assure that the Services are being performed in accordance with safety, health, and environmental regulations and to consult with S-CHEM on matters relating to safety, health, and the environment.
- 8.7 Expertise shall not permit a hazardous, unsafe, unhealthful, or environmentally unsound condition or activity over which it has control to be conducted at the Services site. If Expertise becomes aware of any hazardous, unsafe, unhealthful, or environmentally unsound condition at the Services site, it shall promptly notify S-CHEM and take necessary steps to eliminate, terminate, abate, or rectify the condition or activity. If S-CHEM becomes aware of any such condition or activity prior to notice from Expertise, it shall promptly notify Expertise designated Safety Officer of the condition or activity.
- 8.8 If Expertise does not have the authority to correct or cannot by itself correct a hazardous, unsafe, unhealthful, or environmentally unsound condition or activity, it shall immediately inform S-CHEM. S-CHEM shall provide whatever assistance it can to correct the condition or activity. Any part of the Services affected by the hazardous, unsafe, unhealthful, or environmentally unsound condition or activity shall be discontinued until the condition or activity is corrected.
- 8.9 Expertise shall ensure that tools, equipment, temporary facilities, and other items used in performance of the Services, whether purchased, rented, or otherwise provided by Expertise or S-CHEM are in a safe, sound and good condition and capable of performing the functions for which they are intended.
- 8.10 Expertise shall keep Services site and the adjoining premises, driveways, and streets clear of construction materials and rubbish caused by Expertise's performance of the Services and, promptly after completion of the Services, shall remove all remaining materials from and about the premises and shall leave the Services site safe, clean, and ready for use.
- 8.11 S-CHEM may inspect at reasonable times the Services site and appropriate Services records to ascertain Expertise's compliance with the safety, health and environmental requirements of Service Agreement; however, neither the existence nor exercise of such right shall relieve Expertise of its responsibility for monitoring our compliance with the safety, health and environmental requirements of the Service Agreement and for fulfilling all of its other

obligations hereunder with respect to health, safety and the protection of environment. Should S-CHEM notify the Expertise to abate a hazardous condition or any failure by the Expertise to observe the requirements of this Article and if the condition is not promptly corrected, S-CHEM shall have the right to stop all Services performed by the Expertise at the Services site and to take any other affirmative action necessary to correct the condition on behalf of and for the financial account of Expertise.

8.12 Expertise shall secure observance and compliance with the requirements of this Article.

9.0 SUBMITTALS

9.1 Following documents are submitted along with this proposal.

- Method of Statement
- Tools & Tackles List
- Organization Chart
- Project Experience List and Appreciation/Approval Certificates.
- CVs of supervisors for the job
- QA/QC Management Plan
- Safety Management Plan
- Organization chart
- Project Execution Plan
- Proposed Work Schedule
- Manpower Loading Chart (Histogram)
- Equipment Loading Chart

9.2 Following documents shall be submitted after the award of the project.

- Detailed method statement.
- Safety Plan.
- Detailed Schedule.
- JSA.
- Lifting Plan.
- Manpower and Equipment Loading Chart.

10.0 BID VALIDITY

10.1 Our offer is valid for Three (03) Months from date hereof and later subject to our confirmation.

11.0 REFERENCES

Client Reference for Similar Project:
TASNEE PO#4500112210

Mr. Faisal F. Al-Marri
Supt, Maintenance - PP
Maintenance polymers, Maintenance
Manufacturing, SBU Petrochemicals
TASNEE – KSA.
Tel: +966 (13) 359 6686 | Mob: +966 507042576



Email: f.almarri@tasnee.com

Vendor Reference:

Mr. Martin Wolf
Technical Support & Extrusion Service Manager
Coperion Middle East Co. Ltd.
P. O. Box. 11021 Street # 327
Sector G, Block 2, Lot # 31
Jubail 2 Industrial City 31961
Kingdom of Saudi Arabia
Tel.: +966 (0) 13 510 4467
Mobile: +966 (0) 50 349 4935
E-mail: martin.wolf@coperion.com

12.0 PAYMENT TERMS

- 12.1 As per S-CHEM Standard Payment Terms & Conditions.
- 12.2 Any taxes including VAT, Duties and /or levies, as applicable, during the time of execution of the works shall be charged extra at actuals.
- 12.3 Any further revision in quantities shall be considered as additional and the same shall be considered as additional and quoted accordingly.
-

